

Abstract

A method for controlling the momentum compaction in a beam of charged particles. The method includes a compaction-managed mirror bend achromat (CMMBA) that provides a beamline design that retains the large momentum acceptance of a conventional mirror bend achromat. The CMMBA also provides the ability to tailor the system momentum compaction spectrum as desired for specific applications. The CMMBA enables magnetostatic management of the longitudinal phase space in Energy Recovery Linacs (ERLs) thereby alleviating the need for harmonic linearization of the RF waveform.